

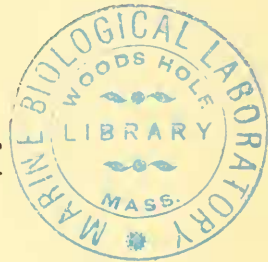
## Contributions to a Knowledge of the Terrestrial Isopoda of Natal.

### Part I.

By

**Walter E. Collinge, D.Sc., F.L.S., etc.,**  
Research Fellow of the University of St. Andrews.

With Plates XL-XLII.



#### CONTENTS.

	PAGE
INTRODUCTION . . . . .	567
I. DESCRIPTION OF NEW SPECIES . . . . .	568
CUBARIS <i>Brandt</i> . . . . .	568
1. <i>C. warreni n. sp.</i> . . . . .	569
2. <i>C. reticulatus n. sp.</i> . . . . .	570
3. <i>C. burnupi n. sp.</i> . . . . .	571
4. <i>C. natalensis n. sp.</i> . . . . .	572
5. <i>C. longicauda n. sp.</i> . . . . .	573
6. <i>C. trilobata n. sp.</i> . . . . .	575
PHILOSOCIA <i>Latreille</i> . . . . .	576
7. <i>P. warreni n. sp.</i> . . . . .	577
8. <i>P. dilectum n. sp.</i> . . . . .	578
II. BIBLIOGRAPHY . . . . .	580
EXPLANATION OF PLATES . . . . .	581

#### INTRODUCTION.

EARLY in 1915 Dr. E. Warren, Director of the Natal Museum, very kindly placed in my hands for identification a small collection of Terrestrial Isopoda from the Museum. Since then Mr. H. C. Burnup has collected further specimens, and Dr. Warren has obtained others from Mr. John Hewitt, Director of the Albany Museum, Grahamstown, Dr. Courad Akerman, and others.

Unfortunately, many of the species are represented by only single specimens, but as further collecting takes place this will no doubt to a large extent be remedied.

Although there are numerous papers treating of the Terrestrial Isopoda of different regions of the African continent, but few of these relate to South African species, and still fewer to those of Natal.

Up to the present time nearly fifty species have been described from South Africa, but only four or five of these have been recorded from Natal; judging from the collection now in my hands (which includes examples of the genera *Cubaris Brandt*, *Philoscia Latreille*, *Porcellionides Miers*, ? *Niambia Budde-Lund*, and others yet unidentified) there can be little doubt but that a rich and varied fauna awaits discovery.

The eight species here described are referable to the genera *Cubaris Brandt* and *Philoscia Latreille*, and have been chosen simply because there were a number of examples in each case.

The two principal writers on the subject in the past are Dollfus and Budde-Lund. The former in 1895 (14) described seven new species from the Transvaal and Cape Colony, whilst the latter has described a number of species from Cape Colony and Natal (5-12), in some cases from single examples only and in others without any figures, whilst many of his Latin diagnoses are not sufficiently definite to enable identification. It is only fair, however, to state that many of his later species are fully and beautifully figured.

## I. DESCRIPTION OF NEW SPECIES.

### *CUBARIS Brandt.*

The hitherto described species of this genus known from South Africa have, with three exceptions, viz., *C. flavescens Brandt*, *C. nigricans Brandt*, and *C. limbatus Brandt*, all been placed in the genus *Armadillo*. As yet the known

forms are fairly widely separated from one another, and few of them have been fully figured or described. The new species here described and figured show little relationship to the above-mentioned species or to species known from elsewhere (2, 3). Budde-Lund (12) has suggested placing all the South African species in the genus *Diploexochus* Brandt, but Brandt's description (4, p. 191) is so very vague that I do not at present feel inclined to follow him.

1. *Cubaris warreni* n. sp. Pl. XL, figs. 1-10.

Body oblong oval, convex, surface with small irregular rugosities in the middle of each mesosomatic segment and raised oval areas laterally; metasome finely granulated. Cephalon (Pl. XL, figs. 1 and 2) small, flanked by the pleural plates of the first mesosomatic segment, anterior margin raised, lateral lobes small; epistome dorsally sloping, raised in the median line and sunken laterally. Eyes large, situated dorso-laterally. Antennulæ short and robust, 3-jointed, with few lateral setæ on the terminal joint. Antennæ (figs. 3 and 4) short and slender, setaceous, 2nd to 5th joints slightly grooved on their outer side; flagellum 2-jointed, the distal joint being two and a half times the length of the proximal one; style elongated with few terminal setæ. First maxillæ (fig. 5), outer lobe terminating in four stout curved spines and six finer inner ones, with long setæ on the outer lateral border; inner lobe rounded distally and with two setose spines. Second maxillæ thin and plate-like. The segments of the mesosome convex, the 1st with expanded pleural plates, anterior and posterior angles acutely pointed, pleural plates of the 2nd-4th segments slightly excavate and their posterior angles produced backwardly, 5th-7th bluntly rounded with the posterior angles produced on the 5th and 6th. Notch and groove on the underside of the inner margin of segments 1 and 2 well developed (fig. 7). Maxillipedes (fig. 6) with outer lobe terminating in a multispinous process and two fine spines, inner lobe with three tooth-like spines. Uropoda (figs. 8 and 9) not extending beyond the

telson, ventrally slightly concave, basal plate thick, strongly raised and convex dorso-laterally, posterior margin pointed, antero-dorsal surface folded, setaceous ventrally, dorsally with triangular-shaped scales; exopodite long, but not extending beyond the posterior margin of the basal plate, setaceous, endopodite rather longer and broader than the exopodite. Telson (fig. 10) longer than the width of the posterior margin and extending a little beyond the uropoda, lateral margins slightly curved, expanded anteriorly and convex, sloping from the median line, with two raised bosses on the anterior margin.

Length 10.5 mm.

Colour (in alcohol) greenish-brown, with lighter-coloured mottling.

Habitat.—Krantzkop, Natal, January 1st, 1915. (E. Warren.)

Type.—In the Natal Museum.

This and the following species belong to a section of the genus characterised by the pointed uropoda and elongated exopodites. The cephalon has the anterior or frontal margin deeply indented, with a sloping epistome dorsally. The antennae are slender. The oral appendages present no characters of particular importance. The telson is fairly long, exceeding the width of the posterior margin, and is raised in the mid-dorsal portion to form a somewhat triangular eminence with two raised bosses on the anterior margin.

It affords me much pleasure to associate with this interesting species the name of Dr. E. Warren, the Director of the Natal Museum.

## 2. *Cubaris reticulatus* n. sp. Pl. XL, figs. 11-21.

Body oblong oval, convex, surface finely granulated. Cephalon (Pl. XL, figs. 11 and 12) small, flanked by the pleural plates of the 1st mesosomatic segment, anterior margin raised, with lateral lobes thickened; epistome dorsally sloping, remainder convex. Eyes fairly large, situated dorso-laterally.

Antennulæ short and robust, 3-jointed, with few lateral setæ on terminal joint. Antennæ (figs. 13 and 14) short and slender, setaceous; flagellum 2-jointed, distal joint more than twice the length of the proximal one, style conical with terminal setæ. First maxillæ (fig. 15), outer lobe terminating in four short curved spines and five smaller pointed ones; inner lobe with a single setose spine. Second maxillæ (fig. 16) thin and plate-like, with inner setose lobe. The segments of the mesosome are convex, the 1st with expanded pleural plates, and anterior and posterior angles acutely pointed, remainder almost truncate; notch on the underside of the inner margin of segment 1 very small, margin of the 2nd segment not grooved (fig. 18). Maxillipedes (fig. 17) with outer lobe terminating in a multispinous process and three small spines; the inner lobe has three curved tooth-like spines. Uropoda (figs. 19 and 20) not extending beyond the telson, basal plate thick, strongly raised and convex, posterior margin rounded, antero-dorsal surface expanded and produced laterally as a spine, setaceous; exopodite long, extending almost to the posterior margin of the basal plate, endopodite rather longer and broader, keeled dorsally and ventrally, setaceous. Telson (fig. 21) rather more than twice as long as wide, lateral margins almost parallel, expanded anteriorly, depressed and almost smooth.

Length 7.5 mm.

Colour (in alcohol) yellowish-brown, with two broken darker lines in the mid-dorsal line, and similar lateral ones above the pleural plates, remaining portions with irregular yellowish markings.

Habitat.—Pentrich, near Pietermaritzburg, Natal, September 14th, 1915. (C. Akerman.)

Type.—In the Natal Museum.

This handsome species stands out very conspicuously from any others I know of. The feeble development of the notch and groove on the inner margin of the underside of segments 1 and 2 of the mesosome is interesting; in all other species I

an acquainted with this is a well-marked character (cf. 2, 3). The uropoda and the elongated form of the telson at once serve to distinguish *C. reticulatus* from any other species. Other differences are present in the form of the cephalon, the antennæ, and the 2nd maxillæ.

3. *Cubaris burnupi* *n. sp.* Pl. XLI, figs. 1-10.

Body oblong oval, strongly convex, smooth dorsally. Cephalon (Pl. XLI, figs. 1 and 2) small, flanked by the pleural plates of the first segment of the mesosome, anterior margin well defined, lateral lobes small; epistome dorsally sloping, remainder slightly convex. Eyes of moderate size, situated dorso-laterally. Antennulæ (fig. 3) short and robust, 3-jointed, with few setæ on the distal joint. Antennæ (figs. 4 and 5) short, setaceous, 2nd to 5th joints grooved on their outer side; flagellum 2-jointed, the distal joint being a little over twice as long as the proximal one. First maxillæ (fig. 6) with outer lobe terminating in four stout curved spines and five more slender ones on the inner side. The segments of the mesosome strongly convex, the 1st segment with large expanded pleural plates, anterior and posterior angles pointed; medially the segment is produced forwards (fig. 7), pleural plates of 2nd to 4th segments excavate, remainder truncate or nearly so, posterior angles very slightly produced backwards. Segments 1 and 2 with notch and groove on the underside of the inner margin (fig. 8). Uropoda (fig. 9) not extending beyond the telson, ventrally concave, basal plate thick, strongly raised and convex dorso-laterally, posterior margin truncate, antero-dorsal surface expanded; exopodite small, not extending beyond the inner margin of the basal plate, endopodite slightly more than twice the length of the exopodite, setaceous. Telson (fig. 10), posterior margin wider than the length, almost truncate, lateral margins curved, convex, and smooth.

Length 14.5 × 8 mm.

Colour (in alcohol) greenish-brown, with lighter irregular mottling.

Habitat.—Town Bush, Pietermaritzburg, Natal, April, 1903. (H. C. B. and E. W.)

Type.—In the Natal Museum.

In the form of the antennulæ, cephalon, uropoda, and telson this species differs from any described form. I have much pleasure in associating with it the name of Mr. H. C. Burnup.

4. *Cubaris natalensis* n. sp. Pl. XLI, figs. 11–20.

Body oblong oval, convex, smooth. Cephalon (Pl. XLI, figs. 11 and 12) small, flanked by the pleural plates of the 1st segment of the mesosome, anterior margin distinct, lateral lobes small; epistome with sloping dorsal portion, in the middle of which is a diamond-shaped concavity, sunken laterally with median ridge. Eyes of moderate size, situated dorso-laterally. Antennulæ short and robust, 3-jointed. Antennæ (figs. 13 and 14) short, setaceous, 2nd to 5th joints grooved on their outer side; flagellum 2-jointed, the distal joint being twice as long as the proximal one. First maxillæ (fig. 15), outer lobe terminating in four stout curved spines and five smaller inner ones. The segments of the mesosome are convex, almost subequal excepting the first, pleural plates of 2nd to 4th segments slightly excavate, remainder truncate, posterior angles small and very slightly produced backwards. Segments 1 and 2 with well-marked notch and groove on the underside of the inner margin (fig. 17). Maxillipedes (fig. 16) wide and stout, outer lobe terminating in a multi-spinous process and three spines, inner lobe with three tooth-like spines, basal plate setose. Uropoda (figs. 18 and 19) not extending beyond the telson, ventrally concave with thickened rim on the anterior border, basal plate thick, strongly raised and convex dorso-laterally, posterior margin truncate, anterodorsal surface prominent and widely expanded; exopodite small, extending to the inner margin of the basal plate, endopodite stout and twice the length of exopodite, setaceous. Telson (fig. 20) longer than the width of the posterior margin and extending slightly beyond the uropoda, lateral margins

almost straight, expanded anteriorly, convex and smooth, posterior margin truncate.

Length 7.5 mm.

Colour (in alcohol) a horny brown with six to seven small whitish markings on each side of the mesosomatic segments.

Habitat.—Krantzkop, Natal, January 1st, 1915. (E. Warren.)

Type.—In the Natal Museum.

This is a very distinct type and easily recognised by the form of the cephalon and the stout uropoda.

5. *Cubaris longicauda* n. sp. Pl. XLI, figs. 21–31.

Body oblong oval, convex, dorsal surface finely granulated. Cephalon (Pl. XLI, figs. 21 and 22) small, flanked by the pleural plates of the first segment of the mesosome, anterior margin distinct, lateral lobes small; epistome almost vertical. Eyes fairly large, situated dorso-laterally. Antennulae (fig. 23) short, 3-jointed, with few lateral setae on the distal joint. Antennae (figs. 24 and 25) rather longer than usual, otherwise typical of the genus. First maxillae (fig. 26), outer lobe terminating in four stout curved spines and six pointed smaller ones, inner lobe with trilobed head and three setose spines, body indented on the inner side to form a trilaminar border. Second maxillae (fig. 27) flat with setose inner lobe with two spines at the base, outer lobe terminating somewhat crenate, and with setae on the inner side. The segments of the mesosome (fig. 29) have the pleural plates well developed with the posterior angles pointed and produced backwards. The notch or tooth on the inner margin of the underside of the 1st segment is very feeble, whilst the groove on the 2nd segment is represented by a slight thickening (fig. 29). Maxillipedes (fig. 28), lobes somewhat stunted and robust. Uropoda (fig. 30) not extending beyond the telson, ventrally slightly concave, basal plate thick, convex, and strongly raised dorso-laterally, posterior margin bluntly rounded, antero-dorsal surface strongly thickened, setaceous ventrally,



dorsally with small triangular-shaped scales; exopodite long, with short terminal style, not extending beyond the posterior margin of the basal plate, endopodite rather longer and broader than the exopodite, setaceous. Telson (fig. 31) nearly twice as long as the width of the posterior margin, not extending beyond the uropoda, lateral margins slightly curved, expanded anteriorly with raised lateral bosses and median keel.

Length 11.5 mm.

Colour (in alcohol) horny-brown, with yellow mottling, pleural plates rather lighter.

Habitat.—Port Alfred, Cape Province, January, 1914. (F. C. Graham.)

Type.—In the Natal Museum.

In the shape of the telson this species bears a slight resemblance to *C. griseo-albus* (*Dollfus*) (14). The rather longer antennæ, the form of the first maxillæ, and the absence of the tooth on the underside of the inner margin of the 1st mesosomatic segment, and the groove on the 2nd segment, are features not hitherto met with in this genus.

6. *Cubaris trilobata* n. sp. Pl. XLII, figs. 1-9.

Body oblong oval, strongly convex, surface smooth. Cephalon (Pl. XLII, figs. 1, 2) small and short, flanked by the pleural plates of the first mesosomatic segment, anterior margin raised, lateral lobes thickened but not pronounced; epistome with diamond-shaped concavity dorsally and a V-shaped ridge ventrally. Eyes fairly large, situated dorso-laterally. Antennulæ (fig. 3) short and robust, with few lateral setæ on terminal joint. Antennæ (fig. 4) slender, sparsely setaceous; flagellum short, distal joint longer than the proximal one. First maxillæ (fig. 5) with outer lobe terminating in four stout curved spines and six smaller pointed ones, inner lobe with trilobed head and three setose spines, body with trilaminar border. The segments of the mesosome are strongly convex, with the pleural plates of

segments 2-4 rounded terminally, those of 5-7 truncate, posterior angles not produced. The notch or tooth on the inner margin of the 1st segment is well developed and there is a definite groove on the 2nd segment (fig. 7). Maxillipedes (fig. 6) with the outer lobe elongated, at the base of the multispinous process are three small spines and a larger one on the outer border, on the inner border is a small pit from whence there arise two spines, a short pointed one and an elongated one with spatulate end. The inner lobe is wide and has three stout tooth-like spines. Uropoda (fig. 8) not extending beyond the telson, ventrally flattened, basal plate thick, convex, and raised dorso-laterally, posterior margin obliquely cut away, antero-dorsal surface thickened; exopodite short, extending to the inner margin of the basal plate, endopodite short and broad, setaceous. Telson (fig. 9) rather longer than the width of the posterior margin, not extending beyond the uropoda, lateral margins strongly curved inwards, expanded anteriorly and slightly raised in the mid-dorsal line, posterior margin almost straight.

Length 11 mm.

Colour (in alcohol) horny brown with irregular dark mottling.

Habitat.—Grahamstown, September, 1915. (J. Hewitt.)

Type.—In the Natal Museum.

In its general shape and colour, and in the trilaminar inner lobe of the 1st maxilla this species shows a distant relationship with *C. longicauda*, but it differs from that species in the form of the cephalon, the presence of the tooth and groove on the underside of the inner margin of the 1st and 2nd mesosomatic segments, the more complicated and elongated lobes of the maxillipedes, and in the form of the uropoda and telson.

#### PHILOSCIA *Latreille*.

This genus at present includes a somewhat heterogeneous group of species which require separating into definite

genera, founded on sound structural characters. Racovitza (16) has erected the genus *Anaphiloscia*, Stebbing (17) that of *Anchiphiloscia*, and Budde-Lund (10) the genera *Aphiloscia* and *Nahia*. All of these, however, seem to me to differ from *Philoscia* in some quite minor feature, and do not help at all. I shall, therefore, for the present place the South African forms in the genus *Philoscia*; no doubt as more material is examined it will be possible to separate them into two or three distinct genera, each possessing well-marked characters.

Writing of this genus in 1908 Stebbing (17) stated: "At present there are a bewildering number of species in the genus *Philoscia*, many of them very incompletely described, and few, if any of them, completely illustrated. A remedy for this state of affairs will not be easily found. The creatures themselves put difficulties in the way of the student. Their readiness to wander about the world undermines any systematic structure built on geographical distribution. Their variability seems to separate forms which are specifically identical. On the other hand, general resemblance seems to unite forms which, on closer examination, are found to be distinct. Among the appendages the antennæ and uropods afford especially useful characters, and these appendages are particularly liable to be detached or broken. The structure of the pleopods, especially those of the male, is more and more acquiring systematic importance."

An examination of a large quantity of material from different parts of the world has convinced me that the mouth parts, by themselves, are certainly very unsatisfactory for purposes of either generic or specific distinction (1), and this is particularly so in the present genus. Apart from the question of variation, the abdominal appendages (pleopods) are scarcely less so, whilst any classification of the Terrestrial Isopoda founded upon sexual characters always leaves it open for the opposite sex to be described as a distinct species.

fully agree as to the great value of the antennæ and uropoda, and to these I would add the shape of the

cephalon, the mesosomatic and metasomatic segments, and the telson.

7. *Philoscia warreni* n. sp. Pl. XLII, figs. 10-20.

Body oblong oval, smooth, metasome abruptly narrower than the mesosome. Cephalon (Pl. XLII, figs. 10 and 11) small, convex above, no definite frontal margin, rounded, lateral lobes small, epistome flattened with well-marked dorsal ridge. Eyes large, also ocelli, situated dorso-laterally. Antennulæ (fig. 12) short and stout, 3-jointed, terminal joint with few setæ laterally and terminally, proximal end of 3rd joint expanded. Antennæ (figs. 13 and 14) long, 1st joint very short, 2nd and 3rd stout and about equal in length, grooved on their outer side, 4th and 5th joints elongated, the latter the longer; flagellum 3-jointed, the terminal joint has the end thickened and there is a short style. First maxillæ (fig. 15) with the outer lobe terminating in four blunt curved spines, and four shorter ones with bifid terminations; inner lobe produced as a spine on the outer border terminally and with two setose spines on the inner side. Second maxillæ (fig. 16) with setose inner lobe, outer lobe very thin and fragile. The segments of the mesosome somewhat depressed, terminal margin of pleural plates of segments 2-5 rounded, posterior angles inconspicuous, those of the 6th and 7th produced backwards. Maxillipedes (fig. 17) with shortened lobes, outer one terminating in two multispinous processes and one small spine; inner lobe with single spine only. The metasome is abruptly narrower than the mesosome and the pleural plates are not expanded or produced backwards. Uropoda (figs. 18 and 19) extending beyond the telson, basal segment roughly ovoid with raised portions on the inner side and ventro-laterally, with the inner one the endopodite articulates and the exopodite with the ventro-lateral one; exopodite elongated, endopodite half the length of the exopodite, triangular in section, both setaceous. Telson (fig. 20) short and broad, laterally rounded, and produced as a blunt point terminally.

Length 14 mm.

Colour (in alcohol) a silvery-grey with darker irregular markings, variable.

Habitat.—Umbilo Bush, near Durban, Natal, September 16th, 1915. (E. Warren.)

Type.—In the Natal Museum.

This handsome species is easily separated from any known form by the form of the antennæ, in which the first three joints are stoutly built, also by the form of the cephalon, first maxillæ, maxillipedes, uropoda, and telson.

The colour is subject to a considerable amount of variation, approaching sometimes that found in *Philoscia dilectum* *Clige.*; in most cases, however, there is an oval light-coloured marking surrounded by darker pigmentation, just above each pleural plate, and in the mid-dorsal line a somewhat similar light-coloured area on each segment of the mesosome, with a darker one immediately posterior to it.

8. *Philoscia dilectum* *n. sp.* Pl. XLII, figs. 21–31.

Body broadly oval, convex, surface finely granulated, metasome abruptly narrower than the mesosome. Cephalon (Pl. XLII, figs. 21 and 22) small, convex above, frontal margin distinct, lateral lobes absent, epistome concave above dorsal ridge and slightly raised in the median line. Eyes large, also ocelli, situated dorso-laterally. Antennulæ (fig. 23) short, with 1st and 2nd joints stout, 3rd joint with lateral and terminal setæ. Antennæ (figs. 24 and 25) comparatively short, slender, 1st joint larger than usual, 2nd and 3rd almost subequal, 5th the longest, setaceous; flagellum 3-jointed, 1st joint the longest, 2nd and 3rd subequal, with bluntly ending style. First maxillæ (fig. 26) with outer lobe terminating in four stout curved spines, and five shorter ones with bifid terminations; inner lobe truncate terminally with two large setose spines. The segments of the mesosome are convex, terminal margin of the pleural plates truncate, posterior angles on segments 1–3 rounded, on remainder pointed and produced slightly backwards. Maxillipedes

(fig. 27) with short outer lobe, terminating in two multi-spinous processes and a single small spine, inner lobe with three tooth-like spines and one elongated one. The segments of the metasome have the pleural plates produced backwardly as sharp spines (fig. 30). Uropoda extending beyond the telson, basal plate raised on the dorsal surface and expanded on the inner side, ventrally it is produced as a blunt spine on the outer anterior margin, and with a thickened rim on the inner margin; endopodite small and cuneiform, setaceous; exopodite rather short and stout, flattened on the outer side, setaceous. Telson (fig. 31) small, lateral margins rounded, terminally rounded with deep sulcus in the mid-dorsal line.

Length 10.5 mm.

Colour (in alcohol), the pleural plates and the posterior border of the segments are a dark brownish-green, whilst the cephalon and the middle and anterior portion of the segments are marked with irregular oval yellow patches.

Habitat.—Pentrich, near Pietermaritzburg, Natal, September 14th, 1915. (C. Akerman.)

Type.—In the Natal Museum.

This beautifully-marked species is removed from the typical *Philoscia* by a number of important characters, such as the form of the cephalon, the stunted outer lobe of the maxillipedes, the uropoda, telson, and the backwardly produced pleural plates of the metasomatic segments. There are other allied species in the collection, which, when examined, may help in rightly placing them.

## II. BIBLIOGRAPHY.

1. COLLINGE, WALTER E.—“On the Range of Variation of the Oral Appendages in some Terrestrial Isopods,” ‘*Journ. Linn. Soc. Lond. (Zool.)*,’ 1914, vol. xxxii, pp. 287–293, pls. 20, 21.
2. ——— “Zoological Results of the Abor Expedition, 1911–12: Terrestrial Isopoda,” ‘*Rec. Indian Mus.*,’ 1914, vol. viii, pp. 465–469, pls. xxxi–xxxiii.
3. ——— “Contributions to a Knowledge of the Terrestrial Isopoda of India, Part I,” *ibid.*, 1915, vol. xi, pp. 143–151, pls. iv–xii.

4. BRANDT, J. F.—“*Conspectus monographiae Crustaceorum Oniscodorum Latreilli.*” ‘*Bull. Soc. Imp. Nat. Moscou.*’ 1833, vol. vi, pp. 171-193.
  5. BUDDE-LUND, G.—“*Crustacea Isopoda Terrestria.*” ‘*Haunia.*’ 1885, pp. 1-320.
  6. ——— ‘*Die Land-Isopoden Ost-Afrikas.*’ 1898, pp. 3-10, T. i.
  7. ——— ‘*A Revision of “Crustacea Isopoda Terrestria.”*’ pts. i-iii, pp. 1-144, T. i-x.
  8. ——— “*Terrestrial Isopoda from Egypt.*” ‘*Jägerskiöld Exped.*,’ 1901, pp. 1-12, T. i.
  9. ——— “*Die Landisopoden der Deutschen Südpolar Expedition, 1901-1903.*” Berlin, 1906, Bd. ix, Zool. i, pp. 71-92, T. iii, iv.
  10. ——— “*Isopoda von Madagascar und Ostafrika.*” ‘*Voeltzkow. Reiss in Ostafrika in den Jahren 1903-1905.*’ Stuttgart, 1908, Bd. ii, pp. 265-308, T. 12-18.
  11. ——— “*Land-Isopoden. I. Schultz, Forschungsreisen im westlichen und zentralen Südafrika ausgeführt in den Jahren 1903-1905.*” ‘*Deutschr. d. medi.-naturwiss. Ges.*,’ Jena, 1909, Bd. xiv, pp. 53-70, T. v-vii.
  12. ——— “*Crustacea. Isopoda.*” ‘*Wiss. ergeb. d. Schwedischen Zool. Exped. nach dem Kilimandjaro, 1905-06.*’ 1910, pp. 3-20, T. 1, 2.
  13. DOLLFUS, ADRIEN.—“*Isopodes terrestres recueillies a Diégo-Suarez, a Tamatave et la Réunion.*” ‘*Mém. Soc. Zool. Fr.*,’ 1895, T. viii, pp. 180-188, figs. 1-12.
  14. ——— “*Crustacés Isopodes Terrestres. Voyage de M. E. Simon dans l’Afrique australe.*” *ibid.*, pp. 345-352, figs. 1-9.
  15. KRAUSS, F.—“*Die südafrikanischen Crustaceen.*’ Stuttgart, 1843.
  16. RACOVITZA, E. G.—“*Biospéologica. Isopodes Terrestres.*” ‘*Arch. Zool. exp. et gén.*,’ 1907, T. 7 (s. iv), pp. 145-225, pls. x-xx; 1908, T. 9 (s. iv), pp. 239-415, pls. iv-xxiii.
  17. STEBBING, T. R. R.—“*Zoological Results of the Third Tanganyika Expedition conducted by Dr. W. A. Cunnington, 1904-1905: Report on the Isopoda terrestria.*” ‘*Proc. Zool. Soc. Lond.*,’ 1908, pp. 554-560, pl. xxvii.
-

## EXPLANATION OF PLATES XL-XLII,

Illustrating Dr. Walter E. Collinge's paper, "Contributions to a Knowledge of the Terrestrial Isopoda of Natal," Part I.

## PLATE XL.

1. *Cubaris warreni* *n. sp.*

FIG. 1.—Dorsal view of the cephalon.

FIG. 2.—Anterior view of the cephalon.

FIG. 3.—Left antenna, dorsal view.

FIG. 4.—Terminal style of antenna.

FIG. 5.—Terminal portion of the inner and outer lobes of the right 1st maxilla, ventral view.

FIG. 6.—Terminal portion of the left maxillipede, ventral view.

FIG. 7.—Underside of the lateral margin of the 1st and 2nd mesosomatic segments.

FIG. 8.—Dorsal view of the right uropod.

FIG. 9.—Ventral view of the right uropod.

FIG. 10.—Dorsal view of the telson, uropoda, and last metasomatic segment.

2. *Cubaris reticulatus* *n. sp.*

FIG. 11.—Dorsal view of the cephalon.

FIG. 12.—Anterior view of the cephalon.

FIG. 13.—Left antenna, dorsal view.

FIG. 14.—Terminal style of antenna.

FIG. 15.—Terminal portion of the inner and outer lobes of the right 1st maxilla, ventral view.

FIG. 16.—Terminal portion of the right 2nd maxilla, ventral view.

FIG. 17.—Terminal portion of the left maxillipede, ventral view.

FIG. 18.—Underside of the lateral margin of the 1st and 2nd mesosomatic segments.

FIG. 19.—Dorsal view of the right uropod.

FIG. 20.—Ventral view of the right uropod.

FIG. 21.—Dorsal view of the telson, uropoda, and last metasomatic segment.



## PLATE XLI.

3. *Cubaris burnupi* n. sp.

FIG. 1.—Dorsal view of the cephalon.

FIG. 2.—Anterior view of the cephalon.

FIG. 3.—Right antennule, ventral view.

FIG. 4.—Left antenna, dorsal view.

FIG. 5.—Terminal style of antenna.

FIG. 6.—Terminal portion of the outer lobe of the right 1st maxilla, ventral view.

FIG. 7.—First mesosomatic segment, dorsal view.

FIG. 8.—Underside of the lateral margin of the 1st and 2nd mesosomatic segments.

FIG. 9.—Dorsal view of the right uropod.

FIG. 10.—Dorsal view of the telson, uropoda, and last metasomatic segment.

4. *Cubaris natalensis* n. sp.

FIG. 11.—Dorsal view of the cephalon.

FIG. 12.—Anterior view of the cephalon.

FIG. 13.—Left antenna, dorsal view.

FIG. 14.—Terminal style of antenna.

FIG. 15.—Terminal portion of the outer lobe of the right 1st maxilla, ventral view.

FIG. 16.—Terminal portion of the left maxillipede, ventral view.

FIG. 17.—Underside of the lateral margin of the 1st and 2nd mesosomatic segments.

FIG. 18.—Dorsal view of the right uropod.

FIG. 19.—Ventral view of the right uropod.

FIG. 20.—Dorsal view of the telson, uropoda, and last metasomatic segment.

5. *Cubaris longicauda* n. sp.

FIG. 21.—Dorsal view of the cephalon.

FIG. 22.—Anterior view of the cephalon.

FIG. 23.—Right antennule, ventral view.

FIG. 24.—Left antenna, dorsal view.

FIG. 25.—Terminal style of antenna.

FIG. 26.—Terminal portions of the inner and outer lobes of the right 1st maxilla, ventral view.

FIG. 27.—Terminal portion of the left 2nd maxilla, ventral view.

FIG. 28.—Terminal portion of the left maxillipede, ventral view.

FIG. 29.—Underside of the lateral margins of the 1st and 2nd mesosomatic segments.

FIG. 30.—Dorsal view of the right uropod.

FIG. 31.—Dorsal view of the telson, uropoda, and last metasomatic segment.

## PLATE XLII.

### 6. *Cubaris trilobata* n. sp.

FIG. 1.—Dorsal view of the cephalon.

FIG. 2.—Anterior view of the cephalon.

FIG. 3.—Left antennule, ventral view.

FIG. 4.—Left antenna, dorsal view.

FIG. 5.—Terminal portion of the inner and outer lobes of the right 1st maxilla, ventral view.

FIG. 6.—Terminal portion of the left maxillipede, ventral view.

FIG. 7.—Underside of the lateral margin of the 1st and 2nd mesosomatic segments.

FIG. 8.—Dorsal view of the right uropod.

FIG. 9.—Dorsal view of the telson, uropoda, and last metasomatic segment.

### 7. *Philoscia warreni* n. sp.

FIG. 10.—Dorsal view of the cephalon.

FIG. 11.—Anterior view of the cephalon.

FIG. 12.—Left antennule, ventral view.

FIG. 13.—Right antenna, dorsal view.

FIG. 14.—Terminal style of antenna.

FIG. 15.—Terminal portions of the inner and outer lobes of the left 1st maxilla, ventral view.

FIG. 16.—Terminal portion of the left 2nd maxilla, ventral view.

FIG. 17.—Terminal portion of the right maxillipede, ventral view.

FIG. 18.—Dorsal view of the right uropod.

FIG. 19.—Basal portion of the ventral side of the right uropod.

FIG. 20.—Dorsal view of the telson and last metasomatic segment.

8. *Philoscia dilectum n. sp.*

FIG. 21.—Dorsal view of the cephalon.

FIG. 22.—Anterior view of the cephalon.

FIG. 23.—Left antennule, ventral view.

FIG. 24.—Right antenna, dorsal view.

FIG. 25.—Terminal style of antenna.

FIG. 26.—Terminal portions of the inner and outer lobes of the left 1st maxilla, ventral view.

FIG. 27.—Terminal portion of the left maxillipede, ventral view.

FIG. 28.—Dorsal view of the right uropod.

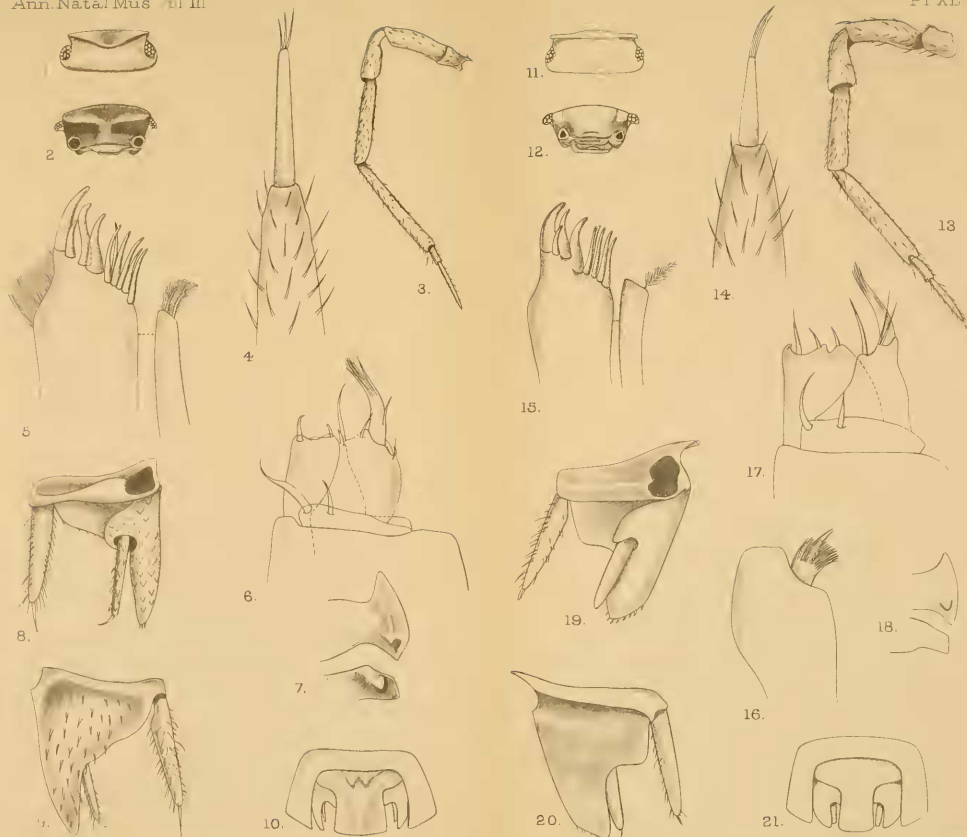
FIG. 29.—Ventral view of the right uropod.

FIG. 30.—Posterior angle of the pleural plate of the last metasomatic segment.

FIG. 31.—Dorsal view of the telson and last metasomatic segment.

---

To the Executive Committee of the Carnegie Trust I desire to express my thanks for a grant to defray the artist's charges for the figures illustrating this paper.

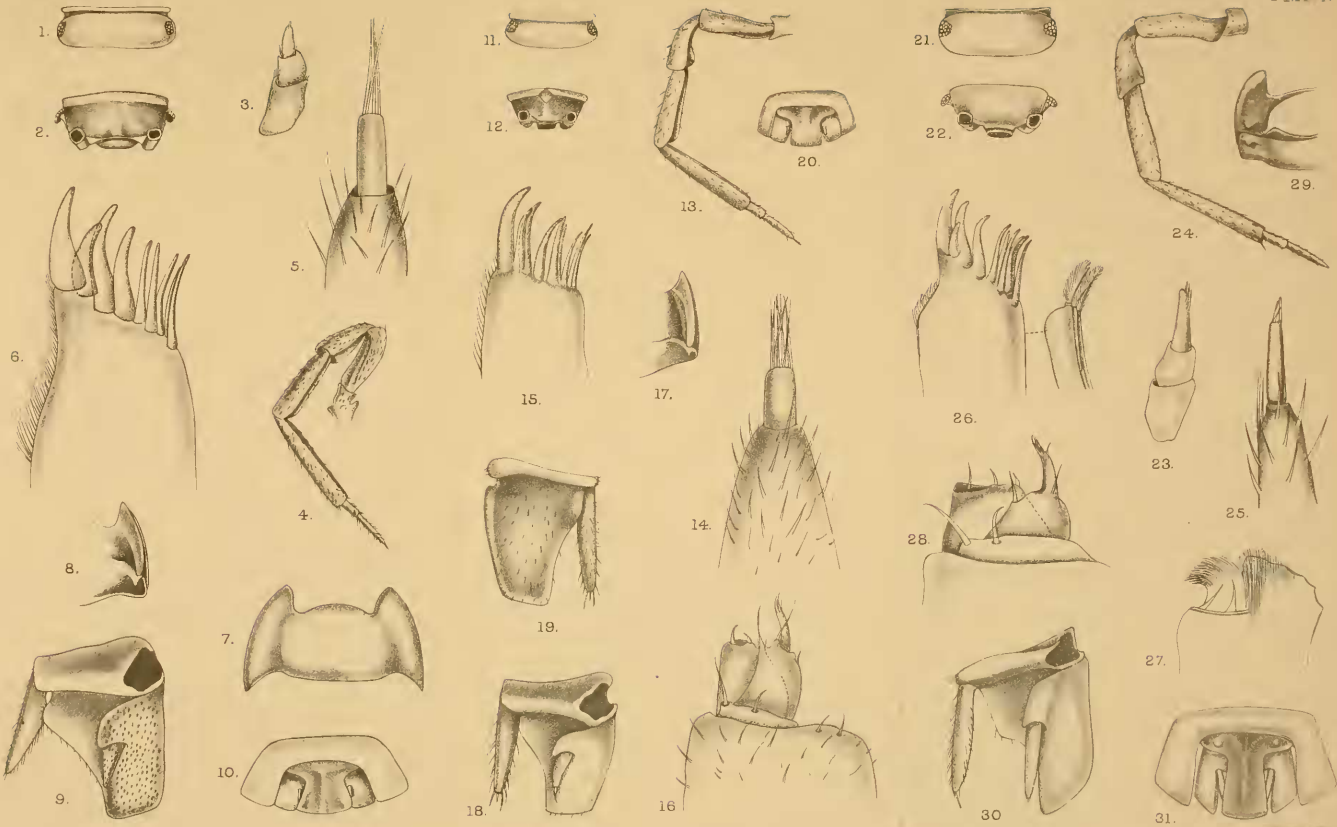


H. G. K. del. ad nat.

*Cubaris warreni* sp. n. figs. 1-10.

Hubb., Lond. del.

*Cubaris reticulatus* sp. n. figs. 11-21.

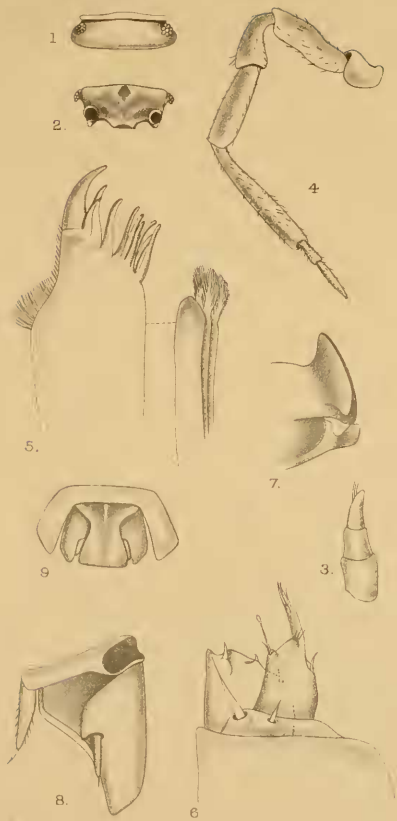


H. G. K. del. ad nat.

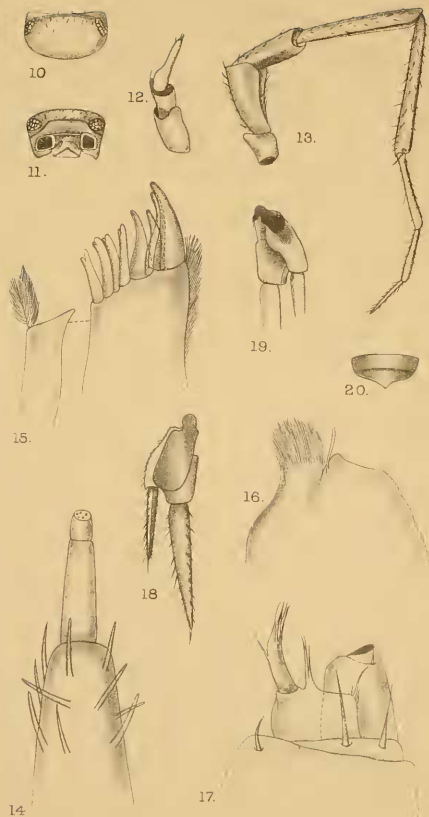
*Cubaris burnupi* sp.n. figs. 1-10.

*Cubaris natalensis* sp.n. figs. 11-20.

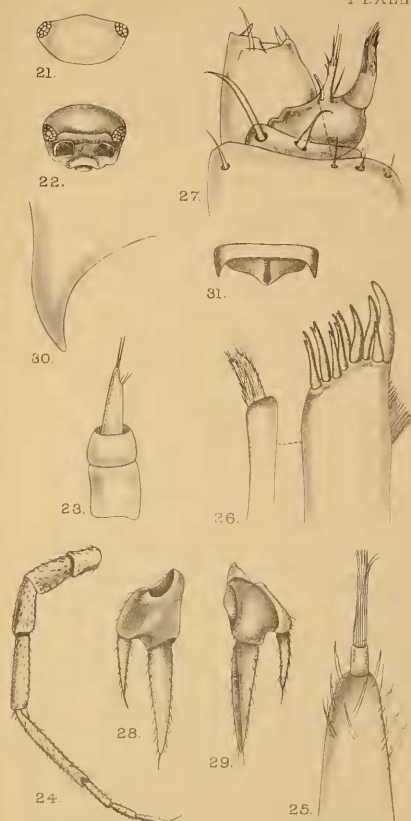
*Cubaris longicauda* sp.n. figs. 21-31.



*Cubaris trilobata* sp. n. figs. 1-9.



*Philoscia warreni* sp. n. figs. 10-20.



*Philoscia dilectum* sp. n. figs. 21-31

3 K del. ad. n. 10.

18 del. ad. n. 10.